

Amendment C

Amendments to the Claims:

Please amend the claims, as indicated below.

Claim 1 (currently amended). A fuser assembly, comprising:

a roller having a metal heat absorptive outer layer on an inner core of thermally isolating material; and

a radiant heating element positioned adjacent and external to said outer layer of said roller.

Claims 2-3 (canceled).

Claim 4 (previously presented). The fuser assembly according to claim 1 further comprising a temperature transducer configured to detect a surface temperature of said roller.

Claim 5 (previously presented). The fuser assembly according to claim 1 further comprising a heating element controller configured to operate said heating element in response to a temperature of said roller.

Claim 6 (original). The fuser assembly according to claim 5 wherein said controller is further responsive to a quantity of toner applied to a section of media corresponding to a section of said fuser roller heated by said heating element.

Claim 7 (original). The fuser assembly according to claim 1 wherein said radiant heating element comprises:

a heating array; and

a heat deflector disposed to direct at least a portion of heat radiated by said heating array toward said roller.

1 Claim 8 (original). The fuser assembly according to claim 7 wherein said heat deflector  
2 also directs at least a portion of heat radiated by said heating array toward a media to  
3 thereby preheat said media prior to engaging said roller.

4 Claim 9 (previously presented). The fuser assembly according to claim 1 wherein said  
5 outer layer has a thickness of between zero and three millimeters.

6 Claims 10-11 (canceled).

7  
8 Claim 12 (original). The fusing assembly according to claim 1 further comprising a  
9 media preheating element configured to radiationally heat said media prior to being  
10 received by said roller.

11 Claim 13 (original). The fusing assembly according to claim 1 wherein said heating  
12 element includes a plurality of longitudinally oriented heating arrays circumferentially  
13 spaced along a periphery of said roller.

14 Claim 14 (currently amended). The fusing assembly according to claim 12 including a  
15 controller configured to detect a thermal property of said roller and, in response,  
16 dynamically control said heating arrays, wherein said thermal property includes a  
17 differential temperature measured on either side of a nip region of said roller.

18 Claim 15 (currently amended). A heated fuser, comprising:

19 a fusing roller comprising low thermal mass outer layer surrounding a thermally  
20 isolating core;

21 a pressure roller comprising an elastomeric outer layer, the pressure roller  
22 disposed adjacent to the fusing roller;

23 a pair of temperature sensors configured to measure a temperature differential  
therebetween; and

24 a radiant heating device disposed external to said fusing roller and configured to  
25 heat said low thermal mass outer layer of said fusing roller to a desired operating  
temperature.

1 Clam 16 (currently amended). The heated fuser according to claim 15 wherein said  
2 outer layer ~~comprises an interior~~ is metal layer and an exterior release layer.

3 Claim 17 (canceled).  
4

5 Clam 18 (original). The heated fuser according to claim 15 wherein said radiant heating  
6 device is further configured to heat a media prior to said media engaging said fusing  
7 roller.

8 Claim 19 (previously presented). A method of fusing toner onto a media comprising:  
9 heating a fusing roller using only radiant heat directed toward a surface of said  
10 fusing roller;  
11 forming a nip region between said fusing roller and a pressure roller, wherein said  
12 nip region has an infeed side and an outfeed side;  
13 transporting the media into rolling contact with said fusing roller and through the  
14 nip region to simultaneously heat said toner to a desired temperature and apply pressure  
15 to the toner causing the toner to fuse to the media; and  
16 detecting a temperature differential between said infeed side and said outfeed  
17 side of said nip region.

18 Claim 20 (previously presented). The method according to claim 19 further comprising:  
19 applying the toner to the media;  
20 radiationally preheating the toner on a portion of the media prior to transporting  
21 said media into rolling contact with said fusing roller.

22 Claim 21 (previously presented). The method according to claim 19 further comprising  
23 controlling heating of said fusing roller in response to detecting said temperature  
24 differential.

25 Claim 22 (previously presented). The method according to claim 21 further comprising:  
ascertaining an additional parameter; and  
controlling heating of said fusing roller in response to ascertaining said additional  
parameter.

1 Claim 23 (previously presented). The method according to claim 22 wherein said  
2 additional parameter is selected from the group comprising: heat energy required per  
3 unit weight of applied toner; heat energy required per unit volume of applied toner;  
4 average density of toner to be fused; maximum density of toner to be fused; media  
5 speed; heater efficiency; ambient air temperature; and, ambient air humidity.

6 Claim 24 (previously presented). The method of claim 19, further comprising detecting a  
7 media thickness in response to detecting said temperature differential.

8 Claim 25 (previously presented). The method of claim 19, further comprising heating  
9 said pressure roller using only radiant heat directed toward a surface of said pressure  
10 roller.

11 Claim 26 (previously presented). The fuser assembly according to claim 1 wherein said  
12 inner core is substantially fabricated from a foamed material or a particulate material.

13 Claim 27 (previously presented). The fuser assembly according to claim 1, wherein said  
14 inner core is substantially fabricated from a material selected from the group comprising:  
15 polyurethane; polystyrene; glass fibre; rubber; porcelain; mica; asbestos; cork; kapok;  
16 and air.

17 Claim 28 (previously presented). The fuser assembly according to claim 1 wherein said  
18 outer layer is substantially fabricated from a material selected from the group  
19 comprising: aluminum; stainless steel; copper; tungsten; metalized rubber; and ceramic.

20 Claim 29 (previously presented). The fuser assembly according to claim 1 wherein said  
21 roller comprises a skeletal inner structure.

22  
23 Claim 30 (previously presented). The fuser assembly according to claim 29 wherein  
24 said skeletal inner structure defines at least one void that is configured to contain air.

25 Claim 31 (previously presented). The fuser assembly according to claim 29 wherein  
said skeletal inner structure comprises at least one rib radially extending from a central  
shaft region to an outer cylindrical portion.

1  
2 Claim 32 (previously presented). The fuser assembly according to claim 29 wherein  
3 said skeletal inner structure comprises at least one spoke radially extending from a  
4 central shaft region to an outer cylindrical portion.

5 Claim 33 (previously presented). The fuser assembly according to claim 13 wherein  
6 each of said plurality of heating arrays is configured to be individually controllable.

7 Claim 34 (currently amended). The fuser assembly according to claim ~~151~~ further  
8 ~~comprising a pair of temperature sensors~~, wherein:

9       said fusing roller and said pressure roller together form a nip region that has an  
10 infeed side and an opposite outfeed side;

11       one of said pair of temperature sensors is positioned proximate said fusing roller  
12 and configured to detect a surface temperature thereof on said infeed side of said nip  
13 region; and

14       another of said pair of temperature sensors is positioned proximate said fusing  
15 roller and configured to detect a surface temperature thereof on said outfeed side of said  
16 nip region.

17 Claim 35 (currently amended). The fuser assembly according to claim ~~151~~ further  
18 ~~comprising a pair of temperature sensors~~, wherein:

19       said fusing roller and said pressure roller together form a nip region that has an  
20 infeed side and an opposite outfeed side;

21       one of said pair of temperature sensors is positioned proximate said fusing roller  
22 and configured to detect a surface temperature thereof on said infeed side of said nip  
23 region; and

24       another of said pair of temperature sensors is positioned proximate said pressure  
25 roller and configured to detect a surface temperature thereof on said outfeed side of said  
nip region.

1 Claim 36 (currently amended). The fuser assembly according to claim 151 ~~further~~  
2 ~~comprising a pair of temperature sensors~~, wherein:

3 said fusing roller and said pressure roller together form a nip region that has an  
4 infeed side and an opposite outfeed side;

5 one of said pair of temperature sensors is positioned proximate said pressure  
6 roller and configured to detect a surface temperature thereof on said infeed side of said  
7 nip region; and

8 another of said temperature sensors is positioned proximate said fusing roller and  
9 configured to detect a surface temperature thereof on said outfeed side of said nip  
10 region.

11 Claim 37 (currently amended). The fuser assembly according to claim 151 ~~further~~  
12 ~~comprising a pair of temperature sensors~~, wherein:

13 said fusing roller and said pressure roller together form a nip region that has an  
14 infeed side and an opposite outfeed side;

15 one of said pair of temperature sensors is positioned proximate said pressure  
16 roller and configured to detect a surface temperature thereof on the infeed side of said  
17 nip region; and,

18 another of said pair of temperature sensors is positioned proximate said pressure  
19 roller and configured to detect a surface temperature thereof on said outfeed side of said  
20 nip region.

21 Claim 38 (previously presented). The fuser assembly according to claim 18 further  
22 comprising an auxiliary media/toner preheat unit configured to heat said media.

23 Claim 39 (previously added). The fuser assembly according to claim 18 wherein said  
24 radiant heating device comprises a heat reflector that defines:

25 a main aperture configured to direct heat energy therethrough and toward said  
fusing roller; and

and a second aperture configured to direct heat energy therethrough and toward  
said media.

Claim 40 (previously presented). The fuser assembly according to claim 7 wherein said  
heat reflector is substantially fabricated from a foam material.